

1 Planetary Radio Emissions

Foreword

S. J. BAUER:	
Planetary Radio Emissions - A Historical Perspective	1
H. OYA:	
Theory of Generation Mechanism of the Planetary Radio Emissions.....	5
D. JONES:	
Non Thermal Continuum Radiation at the Radio Planets	9
M. MAJEWSKI and S. S. SAZHIN:	
RF-Wave Propagation in the Anisotropic Space Plasma.....	39
F. GENOVA:	
Source Location of Planetary Radio - Emissions	51
Y. LEBLANC and G. DAIGNE:	
The broadband Jovian Kilometric Radiation. Statistical Properties and Source Model.....	73
C. H. BARROW:	
The Influence of the Sun on Jupiter's Radio Emission	99
W. CALVERT:	
The Similarities and Differences between AKR and Jovian Decametric Emissions ..	123
B. M. PEDERSEN:	
Voyager Planetary Radio Astronomy Experiment Observations: Plasma Waves in the Jovian and Saturnian Magnetospheres	125
H. O. RUCKER:	
External Control of Saturn Kilometric Radiation: Voyager 1 and 2 Studies	143
P. ZARKA:	
Saturn Electrostatic Discharges: Characterlstics, Comparison to Planetary Lightning and Importance in the Study of Saturn's Ionosphere	161

2 Planetary Radio Emissions II

Foreword

2.1 Introduction

S.J. BAUER:	
Planetary Radio Emission as a Tool of Magnetospheric Research	1
N.F. NESS:	
The Magnetic Environment of the Known Radio Planets.....	3

2.2 Planetary Radio Emissions:

2.2.1 Phenomenology:

A. BOISCHOT:	
Comparative Study of the "Radio - Planets"	15
H. DE FERAUDY, A. BAHNSEN, and M. JESPERSEN:	
Observations of Nightside and Dayside Auroral Kilometric Radiation with Viking ..	41
F. GENOVA:	
Extended Ground-based Observations of Jupiter's Decametric Radiation	53
J.A. PHILLIPS, T.D. CARR, J. LEVY, and W. GREENMAN:	
18 MHz Interferometry of Non-Io-C L-bursts	69
H.O. RUCKER and V. MOSTETSCHNIG:	
Interferometric Observations at 16.7 and 22.2 MHz at the Observatory Lustbühel, Graz	79
K. MAEDA and T.D. CARR:	
Evidence for Beaming of Jupiter's Decametric Radiation: Simultaneous Observations from Voyagers and Ground-based Observatories	87
M.G. AUBIER, W. CALVERT, and F. GENOVA:	
Source Localization of Jupiter's Io Dependent Radio Emissions	105
Y. LEBLANC and F. BAGENAL:	
Jovian Decametric Arc Pattern and Multiple Reflection Alfvén Wave Model	119

D.A. WOLF-GLADROW and F.M. NEUBAUER: Io's Interaction with the Plasma Torus: Currents in the Alfvén Wings and Joule Heating	131
Y. LEBLANC: The Kilometric Jovian Radio Sources at the Io Torus	141
C.H. BARROW: Jupiter's Radio Emission and Solar Activity	165
M.D. DESCH: Does Solar Radio Emission Trigger SKR ?	185
M.L. KAISER: Uranus Radio Emissions	195
T.D. CARR and S. GULKIS: The Auroral Kilometric Radiation from Uranus and its Magnetospheric Implications	215
C.L. GRABBE: Extraordinary Mode Waves on the Resonance Cone Detected on Uranus	229
M.D. DESCH: Planetary Scaling Laws and Predictions for Neptune	239

2.2.2 General Aspects

D. JONES: Planetary Radio Emissions from Low Magnetic Latitudes: Observations and Theories	245
H.O. RUCKER, H.P. LADREITER, Y. LEBLANC, D. JONES, and W.S. KURTH: Low Frequency Radio Waves as a Diagnostic of Thermal Plasma Density in the Jovian Plasma Sheet	283
A. LECACHEUX: Polarization Aspects from Planetary Radio Emissions	299
P. ZARKA: Beaming of Planetary Radio Emissions	315
J.R. THIEMAN, J.K. ALEXANDER, and D.H. STAELIN: Modulated Spectral Activity (MSA) - Implications for Planetary Radio Sources	331

J.L. GREEN:	
Ray Tracing Planetary Radio Emissions	343

2.2.3 Theory

D. LE QUÉAU:	
Planetary Radio Emissions from High Magnetic Latitudes: The "Cyclotron Maser" Theory	369
C.S. WU:	
Cyclotron Maser Instability and its Applications	387
W. CALVERT:	
Planetary Radio Lasing	395
F.T. GRATTON, G. GNAVI, H.K. BIERNAT, M.F. HEYN, and R.P. RIJNBEEK:	
Time Evolution of Low Frequency Plasma Modes	411

2.3 References

References

3 Planetary Radio Emissions III

Foreword

3.1 Planetary magnetic fields

NESS, N. F.:	
Planetary magnetic fields: Salient characteristics.....	1
CONNERNEY, J. E. P.:	
Doing more with Jupiter's magnetic field	13

3.2 Planetary radio emisssions

KAISER, M. L. and M. D. DESCH:	
Jovian broadband kilometric radiation: New observations from Ulysses	35
LADREITER, H. P. and Y. LEBLANC:	
Low-frequency auroral radio emission from Jupiter: The hectometric radiation	45
IMAI, K., L. WANG, and T. D. CARR:	
Origin of Jupiter's decametric modulation lanes	69
GREEN, J. L., J. R. THIEMAN, C. HIGGINS, S. F. FUNG, R. M. CANDEY, and L. AIST-SAGARA:	
Lane features in Jovian hectometric radio emissions	91
MAEDA, K.:	
Jovian decametric Io-related source and interplanetary scintillation	105
RUCKER, H. O., V. MOSTETSCHNIG, H. P. LADREITER, and G. K. F. RABL:	
Spectrometric observations of Jupiter S-bursts at the Observatory Lustbühel, Graz	115
RYABOV, B. P.:	
Jovian S-emission: Decametric high sensitivity observations and model of radiation source.....	125
CARR, T. D. and F. REYES:	
Subpulse structure of Jovian decametric S-bursts (Abstract)	145

LECACHEUX, A., G. A. DULK, and M. Y. BOUDJADA: The elliptical polarization of the Jovian decametric emission and the magnetosphere of Jupiter	147
BOUDJADA, M. Y., G. A. DULK, and A. LECACHEUX: Faraday rotation of Jupiter's decametric radiation	155
LEITINGER, R.: Propagation effects influencing the observations of planetary radio emissions	171
BRAUDE, S. YA., A. V. MEGN, S. L. RASHKOVSKY, N. K. SHARYKIN, G. A. IN-YUTIN, V. A. SHEPELEV, and A. A. KONOVALENKO: The Ukrainian radio interferometer system URAN for studies in decametric wavelengths band (Abstract)	183
BARROW, C. H.: On the propagation of MeV electrons from Jupiter to the Earth	185
HILGERS, A. and H. de FERAUDY: The AKR of the Earth: From studies inside the sources to distant observations and remote sensing	199
GRIGORJEVA, V. P. and V. V. PISAREVA: Regions of enhanced electron concentration in the auroral zone of the Earth magneto- sphere (Abstract)	217
OLSEN, E., A. WEATHERWAX, F. DAILAMI, and J. LABELLE: A programmable receiver for monitoring LF/MF/HF signals from remote sites.....	219
GALOPEAU, P.: Source location of the Saturnian kilometric radiation	231
FARRELL, W. M.: Nonthermal radio emissions from Uranus	241
GULKIS, S., J. D. MENIETTI, D. B. CURRAN, and F. HERBERT: Source location determination of UKR from ray tracing and emission lobe modelling	271
LECACHEUX, A. and B. M. PEDERSEN: Neptune as a radio source	281
LADREITER, H. P., Y. LEBLANC, G. K. F. RABL, and H. O. RUCKER: Methods for the localization of radio sources: Application to the smooth Neptunian kilometric radiation	291

RABL, G. K. F., H. P. LADREITER, H. O. RUCKER, and M. L. KAISER:	
Neptune's smoothly varying radio emission between 600-800 kHz	309

3.3 Comparative studies

WINGLEE, R. M., J. D. MENIETTI, and H. K. WONG:	
Numerical simulations of bursty planetary radio emissions	317
KURTH, W. S.:	
Continuum radiation in planetary magnetospheres	329
ZARKA, P.:	
Remote sensing of auroral plasmas	351
DESCH, M. D.:	
Lightning at planets in the outer solar system	371

3.4 Theory

TREUMANN, R. A., R. POTTELETTE, N. DUBOULOUZ, and J. LABELLE:	
Lower hybrid soliton mediated radio emission	391
RÖNNMARK, K.:	
Conversion of upper hybrid waves into magnetospheric radiation.....	405
SHUKLA, P. K. and L. STENFLO:	
Nonlinear generation of radiation in planetary magnetospheres	419

3.5 General aspects

RUCKER, H. O., H. P. LADREITER, W. MACHER, and G. K. F. RABL:	
Direction finding of electromagnetic waves: Application to planetary radio emission	425
KIENDL, M. T.:	
Polarization and Riemann surfaces	433
KURTH, W. S. and D. A. GURNETT:	
An overview of Galileo plasma wave observations at Venus and Earth (Abstract) ..	443

WU, C. S.:	
Radio emissions associated with shock waves and a brief model of Type II solar radio bursts.....	445
HILDEBRANDT, J. and A. KRÜGER:	
Fine structures of solar radio bursts and noise storms.....	453
ABRANIN, E. P., L. L. BAZELYAN, and V. N. MEL'NIK:	
Radio physics of the Sun at decametric wavelengths	465
BIERNAT, H. K., B. P. BESSER, G. A. BACHMAIER, M. F. HEYN, R. P. RIJN-BEEK, V. S. SEMENOV, I. V. KUBYSHKIN, and C. J. FARRUGIA:	
Petschek-type reconnection at the magnetopause: A comparison of theory with data from ISEE 2 on September 11, 1979	473

3.6 Concluding remarks

BURKE, B. F.:	
Prospects for the study of planetary radio emission	485

3.7 References

References	
------------	--

4 Planetary Radio Emissions IV

Foreword

4.1 Planetary radio emissions

KURTH, W.S., D.A. GURNETT, S.J. BOLTON, A. ROUX, and S.M. LEVIN: Jovian Radio Emissions: An Early Overview of Galileo Observations.....	1
GURNETT, D.A., W.S. KURTH, A. ROUX, C.F. KENNEL, and S.J. BOLTON: Galileo Radio and Plasma Wave Observations at Jupiter: An Invited Overview	15
KAISER, M.L., and L.N. GARCIA: Jupiter's Low-Frequency Radio Spectrum: Filling in the Gaps	17
CARR, T.D., K. IMAI, L. WANG, L. GARCIA, F. REYES, C.H. HIGGINS, and W.B. GREENMAN: Recent Results by the University of Florida Group from Low Frequency Radio Obser- vations of Jupiter and Neptune.....	25
HIGGINS, C.A., T.D. CARR, and F. REYES: A New Determination of Jupiter's Radio Rotation Period.....	43
ZARKA, P., B.P. RYABOV, V.B. RYABOV, R. PRANGÉ, M. ABADA-SIMON, T. FARGES, and L. DENIS: On the Origin of Jovian Decameter Radio Bursts	51
RYABOV, B.P., P. ZARKA, H.O. RUCKER, V.B. RYABOV, and M.Y. BOUDJADA: Recurrent Fine Structures in Jovian S-Burst Emission	65
BOUDJADA, M.Y., H.O. RUCKER, P.H.M. GALOPEAU, P. KLEEWEIN, and V. MOSTETSCHNIG: The Contribution of the Riihimaa Classification to the Study of Jovian Millisecond Ra- dio Bursts:	91
ZARKA, P., J. QUEINNEC, B.P. RYABOV, V.B. RYABOV, V.A. SHEVCHENKO, A.V. ARKHIPOV, H.O. RUCKER, L. DENIS, A. GERBAULT, P. DIERICH, and C. ROSOLEN: Ground-Based High Sensitivity Radio Astronomy at Decameter Wavelengths	101
ARKHIPOV, A.V.: Jovian Decametric Eclipses by the Galilean Satellites	129

MISAWA, H.:	
Polarization of Jupiter's Decametric Radio Bursts	133
SHAPOSHNIKOV, V.E., VL.V. KOCHAROVSKY, V.V. KOCHAROVSKY, H.P.	
LADREITER, H.O. RUCKER, and V.V. ZAITSEV:	
Propagation Effects Influencing the Observed Polarization of the Jovian Decametric Emission	143
LOUARN, P.:	
Radio Emissions from Filamentary Sources: A Simple Approach.....	153
MEYER-VERNET, N., and M. MONCUQUET:	
The Structure of the Io Plasma Torus after Ulysses Encounter.....	167
LIVENGOOD, T.A.:	
Atomic and Molecular Emissions from Jupiter's Poles	181
KHODACHENKO, M.L., and V.M. GUBCHENKO:	
Slow Magnetic Rotator in a Collisionless Plasma: Towards the Theory of Magnetospheres.....	183
REYES, F., T.D. CARR, C.A. HIGGINS, J.A. PHILLIPS, L. WANG, W.C. ERICKSON, K. MAEDA, N. PRESTAGE, W.B. GREENMAN, J. APARICI, F. OLMOS, H. ALVAREZ, L. GARCIA, C. PHILLIPS, A. VRANA, and T. KURODA:	
A Search for Decametric Wavelength Radio Emission from the Collision of Comet S-L 9 with Jupiter.....	195
BOLTON, S.J., and R.M. THORNE:	
Understanding Jupiter's Radiation Belts through Observation and Modeling.....	207
KLEIN, M.J., S. GULKIS, and S. J. BOLTON:	
Jupiter's Synchrotron Radiation: Observed Variations before, during and after the Impacts of Comet SL-9	217
GALOPEAU, P.H.M., E. GERARD, and A. LECACHEUX:	
Modifications of the Synchrotron Radiation Belts of Jupiter two Years After the Collision with Comet SL9.....	225
REINER, M.J., and M. L. KAISER:	
Terrestrial Non-Thermal Continuum Radiation: Wind Observations	233

ANDERSON, R.R., D.A. GURNETT, H. MATSUMOTO, K. HASHIMOTO, H. KOJIMA, Y. KASABA, M.L. KAISER, G. ROSTOKER, J.-L. BOUGERET, J.-L. STEINBERG, I. NAGANO, and H.J. SINGER:	
Observations of Low Frequency Terrestrial Type III Bursts by Geotail and Wind and their Association with Isolated Geomagnetic Disturbances Detected by Ground and Space-Borne Instruments	241
DESCH, M.D.:	
Terrestrial LF Bursts: Source and Solar Wind Connection	251
MENIETTI, J.D., H.K. WONG, W.S. KURTH, D.A. GURNETT, L.J. GRANROTH, and J.B. GROENE:	
Possible Stimulated AKR Observed in Galileo, DE-1 and Polar Wideband Data ...	259
KURIL'CHIK, V.N., M. Y. BOUDJADA, and H. O. RUCKER:	
The Observations of the Subauroral Nonthermal Radio Emission by AKR-X Receiver on Board of the Interball Satellite	275
LABELLE, J.:	
Review of Recent Ground-Level Observations of Terrestrial Auroral Radio Emissions	283
SHEPHERD, S.G., J. LABELLE , M.L. TRIMPI, and R. BRITTAIN:	
Further Investigation of Auroral Roar Fine Structure	291
YOON, P.H., A.T. WEATHERWAX, T.J. ROSENBERG, and J. LABELLE:	
Terrestrial F-Region Cyclotron Maser Theory	293
LEITINGER; R.:	
Transitionospheric Propagation Studies: Novel Data Sources	299
LITVINENKO, L.H.:	
Radiophysical Aspects of the 'Warning' Project	311
LECACHEUX, A., and M. AUBIER:	
Re-visiting Saturnian Kilometric Radiation with Ulysses/URAP	313

4.2 General aspects

RUCKER, H.O., W. MACHER, and S. ALBRECHT: Experimental and Theoretical Investigations on the Cassini RPWS Antennas	327
LADREITER, H.P.: Electromagnetic Wave Direction Finding as Useful Tool for Analyzing Planetary Radio Emissions: Which Information can be Obtained?	339
KLEEWEIN, P., C. ROSOLEN , and A. LECACHEUX: New Digital Spectrometers for Ground Based Decameter Radio Astronomy	349
DE LASSUS, H., and A. LECACHEUX: Automatic Recognition of Low Frequency Radio Planetary Signals	359
BARROW, C.H., G. WOAN, and R. J. MACDOWALL: The Effects of Interplanetary Scattering on Radio Observations of Jupiter at very Low Frequencies	369
TREUMANN, R.A.: Heliospheric Radio Emission Theory	383

4.3 Solar radio emissions

MANN, G.: Electron Acceleration at Coronal and Interplanetary Shock Waves	395
AURASS, H.: Propagation of Particle Beams in Solar Coronal Magnetic Field Structures	407
GARCZYNSKA, I.N., B. ROMPOLT, A. RAOULT, B. CADER-SROKA, and M. TOM-CZAK: Radio Emission Associated with Mass Ejection Events from Active Regions of the Sun - Event of 1992 August 5	409
MEL'NIK, V.N., and E. P. KONTAR: A Fly Off of the Fast Electron Flows Generating Type III Bursts	421
CHERNOV, G.P., M. POQUERUSSE, J. L. BOUGERET, A. K. MARKEEV, G. MANN, and H. AURASS: New Features in Type IV Solar Radio Emission: Combined Effects of Plasma Wave Resonances and MHD Waves	439

ZAITSEV, V.V., A. KRÜGER, J. HILDEBRANDT, and B. KLIEM: On the Origin of Decimetric-Wave Continuum of Solar Flares.....	453
VERONIG, A., M. MESSEROTTI, and A. HANSLMEIER: Nonlinear Analysis of Solar Radio Events: A Preliminary Approach	463
BOUGERET, J.-L.: Very Low Frequency Astrophysics from the Moon	473

4.4 Concluding remarks

TREUMANN, R.A.: Conference Summary.....	475
--	-----

4.5 References

References	
------------	--

5 Planetary Radio Emissions V

Foreword

5.1 Planetary radio emissions

LECACHEUX, A.:	
Radio Observations during the Cassini Flyby of Jupiter.....	1
KURTH, W. S., G. B. HOSPODARSKY, D. A. GURNETT, A. LECACHEUX, P. ZARKA, M. D. DESCH, M. L. KAISER, and W. M. FARRELL:	
High-Resolution Observations of Low-Frequency Jovian Radio Emissions by Cassini.	15
LECACHEUX A., W. S. KURTH, and R. MANNING:	
Sub-second Time Scales in Jovian Radio Emissions as Measured by Cassini/RPWS; Comparison with Ground-based Observations.....	29
KAISER, M. L., W. M. FARRELL, M. D. DESCH, G. B. HOSPODARSKY, W. S. KURTH, and D. A. GURNETT:	
Ulysses and Cassini at Jupiter: Comparison of the Quasi-periodic Radio Bursts.....	41
CONNERNEY, J. E. P., T. SATOH, and J. T. CLARKE:	
Io's Flux Tube Footprint (Abstract)	49
RUCKER, H. O., A. LECACHEUX, A. A. KONOVALENKO, and M. LEITNER:	
New Frontiers in Decameter Radio Astronomy.....	51
KONOVALENKO, A. A., A. LECACHEUX, C. ROSOLEN, and H. O. RUCKER:	
New Instrumentations and Methods for the Low Frequency Planetary Radio Astronomy	63
CARR, T. D.:	
New Clues from the Microstructure of Jupiter's S-Bursts	77
LEITNER, M., and H. O. RUCKER:	
Waveform Analysis Techniques of Jovian S-Burst Observations	91
WILLES, A. J.:	
On a Phase-bunching Model for Jovian S-Bursts.....	97
OYA, M., T. ONO, M. IIZIMA, and H. OYA:	
Location of the Acceleration Region of the Bunched Electrons Inferred from the Inter- action Event of S-Bursts with L-Bursts and N-Bursts.....	105

LITVINENKO, G. V., H. O. RUCKER, V. V. VINOGRADOV, B. P. RYABOV, and V. E. SHAPOSHNIKOV:	
Some Results of the Jovian DAM Emission Investigation with Wavelet Analysis Technique	113
IMAI, K., F. REYES, and T. D. CARR:	
Modulation Lane Measurement of Jupiter's Io-B Source Parameters	119
BARROW, C. H., A. LECACHEUX, and R. J. MacDOWALL:	
Polarization and Beaming of the Jovian bKOM and HOM Observed at 5 AU from Jupiter by Ulysses/URAP	127
SHAPOSHNIKOV, V. E., V. V. ZAITSEV, H. O. RUCKER, and G. V. LITVINENKO:	
Interaction of Io's Ionosphere with the Jovian Magnetic Field: Is this a Reason of Depression in the Background Magnetic Field Recorded by Galileo?	141
BOUDJADA, M. Y., P. H. M. GALOPEAU, and H. O. RUCKER:	
Spectral Features of Jovian Hectometric Emission Observed by Galileo and Wind Spacecraft	147
HOSPODARSKY, G. B., I. W. CHRISTOPHER, J. D. MENIETTI, W. S. KURTH, D. A. GURNETT, T. F. AVERKAMP, J. B. GROENE, and P. ZARKA:	
Control of Jovian Radio Emissions by the Galilean Moons as Observed by Cassini and Galileo	155
ARKHIPOV, O. V.:	
Jovian Decametric Occultations by Callisto in 2001-2010	165
BOUDJADA, M. Y., M. AUBIER, P. H. M. GALOPEAU, H. O. RUCKER, M. L. KAISER, A. LECACHEUX, and P. MOREAU:	
Ground and Space Observations of Jovian Decametric Emissions in the Frequency Band from 1 MHz to 40 MHz	173
ALIMOV, V. A., G. N. BOIKO, A. N. KARASHTIN, YU. V. TOKAREV, and M. L. KAISER:	
Spectrographic Investigations of the Structure of Jupiter's Decametric Radio Emission Sources	179
BOUDJADA, M. Y., P. H. M. GALOPEAU, H. O. RUCKER, and A. LECACHEUX:	
Temporal Evolution Steps of Jovian Narrow-band Emissions	187

GALOPEAU, P. H. M., M. Y. BOUDJADA, and H. O. RUCKER: Efficiency of the Cyclotron Maser Instability and Occurrence Probability of Jovian Decameter Radio Emissions	195
MEL'NIK, V. N.: To the Theory of Electron Cyclotron Maser Radio Emission of Electron Beams	205
OYA, M., T. NAKAJO, S. KONNO, T. ONO, M. IIZIMA, and H. OYA: Development of an Array Antenna System and a Multi-frequency Interferometer Network for the Jovian Decametric Radiation	211
BOLTON, S. J., and S. GULKIS: Jupiter's Synchrotron Emission: Unveiling the Jovian Inner Radiation Belts Through Modeling and Observation (Abstract)	219
KLEIN, M. J., S. J. BOLTON, S. GULKIS, M. A. JANSSEN, S. J. LEVIN, J. P. ROLLER, and R. K. McLEOD: Cassini-Jupiter Microwave Observing Campaign: DSN and GAVRT Observations of Jovian Synchrotron Radio Emission	221
JANSSEN, M. A., S. J. BOLTON, S. M. LEVIN, R. SAULT, M. J. KLEIN, S. GULKIS, M. D. HOFSTADTER, C. ELACHI, W. T. K. JOHNSON, A. BUNKER, E. J. GUDIM, G. A. HAMILTON, O. LIEPACK, L. E. ROTH, R. D. WEST, T. BASTIAN, G. DULK, Y. LEBLANC, R. THORNE, J. P. ROLLER, and R. K. McLEOD: Cassini RADAR/Radiometer and VLA Observations of Jupiter's Synchrotron Emission	229
GALOPEAU, P. H. M., and E. GERARD: The Evolution of Jupiter's Synchrotron Radiation along the Solar Cycle	237
SANTOS-COSTA, D., S. BOURDARIE, Y. LEBLANC, R. SAULT, S. J. BOLTON, and G. A. DULK: Synchrotron Emission at 6 and 20 cm: VLA Images and 3-D Modeling of the Jovian Radiation Belts (Abstract)	245
KURTH, W. S., and P. ZARKA: Saturn Radio Waves	247
LAMMER, H., T. TOKANO, G. FISCHER, G. J. MOLINA-CUBEROS, W. STUMPTNER, K. SCHWINGENSCHUH, and H. O. RUCKER: Detection Capability of Cassini for Thundercloud Generated Lightning Discharges on Titan	261

ERGUN, R. E., Y.-J. SU, and F. BAGENAL: Terrestrial Radio Emission: AKR	271
DE FERAUDY, H., J. HANASZ, and R. SCHREIBER.: Terrestrial Kilometric Radiation and Magnetospheric Activity: Bursts and Substorms, Periodic Emissions and Field-Line Resonances	281
BOUDJADA, M. Y., V. N. KURIL'CHIK, H. O. RUCKER, D .F. VOGL, and E. KAUF-MANN: Spectral Features in Auroral Kilometric Radiation.....	289
LABELLE, J. W.: Recent Observations of Auroral Roar Emissions: Flickering and Direction Finding (Ab- stract)	295
ANDERSON, R. R., H. MATSUMOTO, K. HASHIMOTO, H. KOJIMA, I. NAGANO, Y. KASABA, M. L. KAISER, J.-L. BOUGERET, and J.-L. STEINBERG: Using Geotail, Wind and Polar Observations of Solar, Interplanetary, and Terrestrial Plasma Wave and Radio Emissions to Identify Source Characteristics.....	297
SCHREIBER, R.: Instantaneous AKR Emission Cone.....	311
KAUFMANN, E., D. F. VOGL, H. O. RUCKER, H. K. BIERNAT, M. Y. BOUDJADA, S. MÜHLBACHER, and D. LANGMAYR: Geomagnetic Latitudes and Longitudes of Source Locations of Planetary Radio Emis- sions: Theoretical Approach and Spacecraft Observations.....	317
KURIL'CHIK, V. N, M. Y. BOUDJADA, and H. O. RUCKER: Interball-1 Observations of the Plasmaspheric Emissions Related to Terrestrial "Continuum" Radio Emissions	325
KURIL'CHIK, V. N, M. Y. BOUDJADA, and H. O. RUCKER: Observations of the Subauroral Non-thermal Radio Emission (SANE) in 1995-1998	337

5.2 General Aspects

FISCHER, G., W. MACHER, H. O. RUCKER, H. P. LADREITER, D. F. VOGL, and the CASSINI/RPWS TEAM:	
Wire-grid Modeling of Cassini Spacecraft for the Determination of Effective Antenna Length Vectors of the RPWS Antennas.....	347
VOGL, D. F., H. P. LADREITER, P. ZARKA, H. O. RUCKER, W. MACHER, W. S. KURTH, D. A. GURNETT, and G. FISCHER:	
First Results on the Calibration of the Cassini RPWS Antenna System.....	357
KHODACHENKO, M. L., D. LANGMAYR, and H. O. RUCKER:	
On the Structure of Electromagnetic Field Generated by a Moving External Current Source in a Magnetized Plasma	367
LANGMAYR, D., N. V. ERKAEV, V. S. SEMENOV, V. A. SHAIDUROV, H. K. BIER-NAT, H. O. RUCKER, D. F. VOGL, and S. MÜHLBACHLER:	
Field-aligned Electric Field in the Io Flux Tube as a Result of a Pressure Pulse near Io375	
KHODACHENKO, M. L., D. LANGMAYR, H. O. RUCKER, and V. M. GUBCHENKO:	
Electromagnetic Environment Produced by a Moving Conducting Body in a Magnetized Collisionless Plasma.....	381
ERKAEV, N. V., V. S. SEMENOV, V. A. SHAIDUROV, D. LANGMAYR, H. K. BIER-NAT, and H. O. RUCKER:	
Effects of MHD Slow Shocks Propagating along the Io Flux Tube.....	389
KARASHTIN, A. N., V. A. ALIMOV, G. N. BOIKO, G. P. KOMRAKOV, A. L. MA-LIKEEV, YU. V. TOKAREV, and M. L. KAISER:	
On the Plasma Turbulence in the Jovian Magnetosheath	395
BOUGERET, J.-L., A. A. KONOVALENKO, I. S. FALKOVICH, N. N. KALINICHENKO, and M. R. OLYAK:	
Solar Wind Diagnostic Using Observations of Interplanetary Scintillations of Cosmic Radio Sources at Extremely Low Frequencies	403
BEZVESILNIY, O. O., V. V. VINOGRADOV, and K. SCHUNEMANN:	
Image Denoising Algorithm Based on Template Wavelet Coefficients.....	407
FALKOVICH, I. S., A. A. KONOVALENKO, N. N. KALINICHENKO, and A. A. GRIDIN:	
Interplanetary Medium and Ionospheric Investigations with New Wide Band Active Antenna Array.....	415

SHATALINA, M. V., and E. A. MAREEV: Antenna Diagnostics of the Dust in Space Plasma	423
--	-----

5.3 Solar Radio Emissions

DULK, G.: Solar Radio Emissions.....	429
HAGGERTY, D. K., E. C. ROELOF, and M. L. KAISER: Relative Timing of Impulsive Solar Electron Injections and Solar Electromagnetic Emissions	437
MANN, G., A. KLASSEN, H. AURASS, H. T. CLASSEN, V. BOTHMER, and M. J. REINER: EIT Waves, Coronal Shock Waves, and Solar Energetic Particle Events	445
CHERNOV, G. P., J.-L. BOUGERET, M. POQUERUSSE, A. LECACHEUX, and P. ZLOBEC: Joint Observations of Fine Structures in some Recent Solar Radio Bursts	451
ZLOTNIK, E. YA., and V. V. ZAITSEV: Interpretation of Fine Structure in Solar Non-thermal Radio Emission (Zebra-Pattern and Broadband Pulsations) and Diagnostics of Post-flare Coronal Plasma.....	463
MESSEROTTI, M., P. ZLOBEC, A. VERONIG, and A. HANSLMEIER: Radio Pulsations in the m-dm Band: Case Studies	471
MEL'NIK, V. N., and E. P. KONTAR: Plasma Emission of Beam-Plasma Structure in the Solar Corona	479
GARCZYNSKA, I., E. SZUSZAKIEWICZ, P. RUDAWY, B. ROMPOLT, and B. CADERSROKA: Some Eruptive Events of Summer 2000 Observed at Wroclaw Observatory	487
GUBCHENKO, V. M., V. V. ZAITSEV, H. K. BIERNAT, and H. O. RUCKER: 3D Coronal Structures Formation in a Kinetic Approach: Transients and Rays.....	495

5.4 References

References	513
------------------	-----

6 Planetary Radio Emissions VI

Foreword

6.1 50th Anniversary of Jupiter as a Radio Planet

BURKE B. F.:	
Planetary Radio Astronomy, Fifty Years Ago and Fifty Years Hence	1
FRANKLIN K. L. and L. N. GARCIA:	
Father Zeus	13
GARCIA L. N., J. R. THIEMAN, and C. A. HIGGINS:	
The Birthplace of Planetary Radio Astronomy: the Seneca, Maryland observatory 50 years after Burke and Franklin's Jupiter Radio Emission Discovery	17
BARROW C. H. and T. D. CARR:	
First Observations of Jupiter's Radio Emissions in Florida	25

6.2 Saturn Radio Emissions

GURNETT D. A. and the CASSINI/RPWS TEAM:	
Cassini Radio and Plasma Wave Observations at Saturn	35
CECCONI B., P. ZARKA, and W. S. KURTH:	
SKR Polarization and Source Localization with the Cassini/RPWS/HFR Instrument: First Results	37
TAUBENSCHUSS U., H. O. RUCKER, W. S. KURTH, B. CECCONI, M. D. DESCH, P. ZARKA, M. K. DOUGHERTY, and J. T. STEINBERG:	
External Control of Saturn Kilometric Radiation	51
MITCHELL D. G.:	
Saturn Rotation Modulated ENA and SKR Emissions: Implications for Magnetic Field Asymmetry	61
CECCONI B. and P. ZARKA:	
Model of a Variable Radio Period for Saturn.....	63
DOUGHERTY M. K., E. J. SMITH, G. GIAMPIERI, and C. T. RUSSELL:	
Cassini Magnetic Field Observations of Saturn's Internal Planetary Magnetic Field: 65	

HOSPODARSKY G. B., W. S. KURTH, D. A. GURNETT, P. ZARKA, P. CANU, M. K. DOUGHERTY, G. H. JONES, A. COATES, and A. RYMER: Observations of Langmuir Waves Detected by the Cassini Spacecraft.....	67
PERSOON A. M., D. A. GURNETT, W. S. KURTH, G. B. HOSPODARSKY, J. B. GROENE, P. CANU, and M. K. DOUGHERTY: An Electron Density Model for Saturn's Inner Magnetosphere	81
MONCUQUET M., N. MEYER-VERNET, A. LECACHEUX, B. CECCONI, and W. S. KURTH: Quasi Thermal Noise in Bernstein Waves at Saturn.....	93
SANTOLIK O., D. A. GURNETT, L. XIN, W. S. KURTH, and G. B. HOSPODARSKY: Funnel-shaped Emissions Observed by Cassini Close to the Saturn's B Ring	101
DESCH M. D., G. FISCHER, M. L. KAISER, W. M. FARRELL, W. S. KURTH, D. A. GURNETT, P. ZARKA, A. LECACHEUX, C. C. PORCO, A. P. INGERSOLL, and U. DYUDINA: Cassini RPWS and Imaging Observations of Saturn Lightning.....	103
ZARKA P., B. CECCONI, L. DENIS, W. M. FARRELL, G. FISCHER, G. B. HOSPODARSKY, M. L. KAISER, and W. S. KURTH: Physical Properties and Detection of Saturn's Lightning Radio Bursts	111
FISCHER G., W. MACHER, M. D. DESCHE, M. L. KAISER, P. ZARKA, W. S. KURTH, W. FARRELL, A. LECACHEUX, B. CECCONI, and D. A. GURNETT: On the Intensity of Saturn Lightning	123
KURTH W. S., B. CECCONI, D. A. GURNETT, M. L. KAISER, P. ZARKA, and A. LECACHEUX: Is Titan a Radio Source?	133
ERKAEV N. V., A. V. SHAIDUROV, and H. K. BIERNAT: Propagation of the Alfvén Waves Generated by the Interaction of Titan with Magneto-spheric Plasma	143
LECACHEUX A.: The "Radio Horizon" Effect as a Possible Explanation of the Planetary Auroral Radio Emission Phenomenology	151

6.3 Jupiter Radio Emissions

SHAPOSHNIKOV V. E., V. V. ZAITSEV, and H. O. RUCKER: Origin of Active Longitudes in Jovian Decametric Radio Emission	153
GALOPEAU P. H. M., M. Y. BOUDJADA, and H. O. RUCKER: Jovian Active Longitude: a Parametric Study	161
BOUDJADA M. Y., P. H. M. GALOPEAU, and H. O. RUCKER: Study of the Modelled Occurrence Variability of the Jovian Decametric Emissions .	169
TAUBENSCHUSS U., H. O. RUCKER, and W. MACHER: Jupiter S-burst Polarization Measurements Using the Waveform Receiver	175
LITVINENKO G. A., H. O. RUCKER, U. TAUBENSCHUSS, A. A. KONOVALENKO, A. LECACHEUX, V. V. VINOGRADOV, and V. E. SHAPOSHNIKOV: Investigation of the Jovian S-Emission Dynamic Spectrum Features	183
ERGUN, R.: S-Bursts and the Jupiter Ionospheric Alfvén Resonator	193
REINER M. J., M. L. KAISER, M. D. DESCH, and R. J. MacDOWALL: Jovian Bursty High-Latitude Emissions Revisited: The Ulysses-Jupiter Distant Encounter	195
MacDOWALL R. J., M. D. DESCH, M. L. KAISER, M. J. REINER, R. A. HESS, D. J. McCOMAS, and R. J. FORSYTH: Ulysses Observations of Jovian Radio Emissions over a Wide Range of Jovicentric Latitudes	205
IMAI K., F. REYES, T. D. CARR, and A. LECACHEUX: Recent Progress in the Measurement of Jupiter's Decametric Radio Source Parameters by the Modulation Lane Method	213
IMAI K., M. IMAI, F. REYES, W. GREENMAN, K. SALLOT, R. FLAGG, J. SKY, C. HIGGINS, and J. THIEMAN: The Internet Jupiter Radio Observatory and Modulation Lanes Observed by the New UFRO Jove Spectrograph	223
THIEMAN J., R. FLAGG, J. SKY, C. HIGGINS, L. GARCIA, F. REYES, W. GREENMAN, B. PINE, J. GASS, and K. IMAI: The Radio JOVE Project: Amateurs Working with Professionals	225

6.4 Auroral Kilometric Radiation

GARCIA L. N., J. L. GREEN, S. A. BOARDSEN, S. F. FUNG, and B. W. REINISCH:	Auroral Kilometric Radiation Source Region Variations with Season and Solar Cycle	231
BURINSKAYA T. M., and J. L. RAUCH:	Thin Plasma Cavities as a Source of the Auroral Kilometric Radiation	241
SCHREIBER R.:	Partially Filled AKR Emission Cones	249
MOGILEVSKY M., J. HANASZ, and I. MOISEENKO:	Variation of AKR Source Altitude as a Result of Ionosphere-Magnetosphere Interaction	257
MENIETTI J. D. and W. S. KURTH:	Ordered Fine Structure in the Radio Emission Observed by Cassini, Cluster and Polar	265
LEITINGER R.:	Transitionospheric Propagation Parameters Calculated from Empirical Electron Density Models Adapted to Realistic Conditions	273
LEITINGER R., E. FEICHTER, M. RIEGER, and C. MARTINECZ:	Adapting Empirical Electron Density Models to Disturbed Conditions	281
CANU P., P. DÉCRÉAU, S. ESCOFFIER, and S. GRIMALD:	Observation of Continuum Radiation Close to the Plasmapause: Evidence for Small Scale Sources	289
FISCHER G. and H. O. RUCKER:	Man-made Radio Emissions Recorded by Cassini/RPWS During Earth Flyby	299
BEHLKE R., H. KUCHAREK, S. D. BALE, M. ANDRÉ, and E. LUCEK:	The Electrostatic Potential at the Earth's Quasi-Parallel Bow Shock	307
DENISENKO V. V., H. K. BIERNAT, N. V. ERKAEV, and V. S. SEMENOV:	Mathematical Model of Magnetic Field Perturbations by Currents in the Earth's Magnetosphere	309
LANGMAYR D., N. V. ERKAEV, and H. K. BIERNAT:	Influence of the Ion Flow Direction on the Modified Two Stream Instability	317

6.5 Solar Radio Emissions

BENZ A. O.:	
Radio Emission of Solar Flare Particle Acceleration	325
ZAITSEV V. V., V. E. SHAPOSHNIKOV, and H. O. RUCKER:	
On Possible Escape of Electron Cyclotron Maser Radiation From Active Regions in the Solar Corona.....	339
MANN G., H. AURASS, and A. WARMUTH:	
Generation of Highly Energetic Electrons at the Reconnection Outflow Shock During Solar Flares	349
ÖNEL H., G. MANN, and E. SEDLMAYR:	
Transport of Energetic Electrons Through the Solar Corona and the Interplanetary Space	
357	
WARMUTH A., G. MANN, and H. AURASS:	
On the Relation Between Large-Scale Coronal Waves and Metric Type II Solar Radio Bursts	367
MEL'NIK V. N., A. A. KONOVALENKO, H. O. RUCKER, E. P. ABRANIN,	
V. V. DOROVSKYY, A. LECACHEUX, and A. A. STANISLAVSKY:	
Sporadic Solar Radio Emission at Decameter Wavelengths	275
DOROVSKYY V. V., V. N. MEL'NIK, A. A. KONOVALENKO, H. O. RUCKER, E. P.	
ABRANIN, and A. LECACHEUX:	
Observations of Solar S-bursts at the decameter wavelengths	383
MAGDALENIĆ J., B. VRŠNAK, P. ZLOBEC, G. MANN, H. AURASS, and	
A. HILLARIS:	
Properties of Very Short-Duration Solar Radio Bursts	391
MAGDALENIĆ J., B. VRŠNAK, P. ZLOBEC, and A. HILLARIS:	
New Families of Super Short Radio Bursts	399
BOUDJADA M. Y., A. LECACHEUX, S. SAWAS, A. STANGL, and W. VOLLER:	
Spectral Study of Solar Type III Decametric Bursts	401
MITEVA R. and G. MANN:	
Excitation of electrostatic waves in a flaring plasma	409

CAIRNS I. H. and S. A. KNOCK: Predictions for Dynamic Spectra and Source Regions of Type II Radio Bursts in the Inhomogenous Corona and Solar Wind	419
KHODACHENKO M. L., H. O. RUCKER, A. G. KISLYAKOV, V. V. ZAITSEV, and S. URPO: Dynamic Processes in Groups of Solar Coronal Magnetic Loops Observed in Microwaves	
431	
GUBCHENKO V. M., H. K. BIERNAT, M. L. KHODACHENKO, and H. O. RUCKER: On the 3D Kinetic Modeling of a Magnetotail/Solar Streamer by a Plasma Flow Over Magnetic Dipole and Toroid	441
SEMENOV V. S., S. A. DYADECHKIN, I. V. KUBYSHKIN, and H. K. BIERNAT: Mechanism of Relativistic Jet Formation and Generation of Synchrotron Radiation	457

6.6 Instrumentation

KAISER M. L.: The STEREO Mission and the S/WAVES Instrument	467
OSWALD T. H., W. MACHER, G. FISCHER, H. O. RUCKER, J.-L. BOUGERET, M. L. KAISER, and K. GOETZ: Numerical Analysis of the STEREO WAVES Antennas: First Results	475
MACHER W., D. PLETTEMEIER, H. O. RUCKER, and G. FISCHER: Wire-Grid Simulations of the Mars Express/MARSIS Antenna System	483
MacDOWALL R. J., N. GOPALSWAMY, M. L. KAISER, L. D. DEMAIO, S. D. BALE, J. HEWITT, J. C. KASPER, A. J. LAZARUS, R. E. HOWARD, D. L. JONES, M. J. REINER, and K. W. WEILER: Microsat and Lunar-Based Imaging of Radio Bursts	491
NODA H., N. KAWANO, M. INOUE and the LUNAR LOW FREQUENCY ASTRONOMY STUDY TEAM: Low Frequency Observation on the Moon	505

KONOVALENKO A. A., H. O. RUCKER, A. LECACHEUX, V. N. MEL'NIK, I. S. FALKOVICH, N. N. KALINICHENKO, M. R. OLYAK, A. V. MEGN, S. L. RASHKOVSKIJ, V. A. SHEPELEV, S. V. STEPKIN, D. V. MUHA, M. A. SIDORCHUK, O. M. UL'YANOV, B. THIDE, Yu. V. TOKAREV, A. N. KARASHTIN, V. V. KOSHEVOJ, A. B. LOZYNSKIJ, and A. I. BRAZHENKO: Utilizing Existing Decameter Radio Telescopes as Pathfinders Towards LOFAR - LWA - LOIS Science and Technology.....	507
NIGL A., J. KUIJPERS, H. FALCKE, P. ZARKA, and L. BÄHREN: Jupiter Burst Observation with LOFAR/ITS	517
LAZIO T. J. W. , N. KASSIM, K. W. WEILER, P. RAY, B. HICKS, P. CRANE, A. CO- HEN, E. POLISENSKY, K. STEWART, and W. LANE: Planetary and Solar Radio Emission Studies with the Long Wavelength Array	529
TOKAREV Yu., J.-L. BOUGERET, B. CECCONI, A. LECACHEUX, M. L. KAISER, and W. S. KURTH: SURA-WAVES Experiments: Calibration of the Cassini/RPWS/HFR Instrumentation	531

6.7 Exoplanetary Radio Emissions

ZARKA P.: Hot Jupiters and Magnetized Stars: Giant Analogs of the Satellite-Jupiter System? ..	543
GRIEBMEIER J.-M., U. MOTSCHMANN, M. KHODACHENKO, and H. O. RUCKER: The Influence of Stellar Coronal Mass Ejections on Exoplanetary Radio Emission ..	571
SIDORCHUK K. M., A. A. KONOVALENKO, V. N. MEL'NIK, H. O. RUCKER, G. FIS- CHER, A. LECACHEUX, E. P. ABRANIN, M. A. SIDORCHUK, A. A. STANISLAVSKY, O. M. UL'YANOV, V. V. ZAKHARENKO, and I. N. BUBNOV: Search of Non-Thermal Radio Emission from Planets and Stars at Decameter Wave- length	581
MAJID W., D. WINTERHALTER, I. CHANDRA, T. KUIPER, J. LAZIO, C. NAUDET, and P. ZARKA: Search for Radio Emission from Extrasolar Planets: Preliminary Analysis of GMRT Data	589
WINTERHALTER D., T. KUIPER, W. MAJID, I. CHANDRA, J. LAZIO, P. ZARKA, C. NAUDET, G. BRYDEN, W. GONZALEZ, and R. TREUMANN: Search for Radio Emissions from Extrasolar Planets: the Observation Campaign ..	595

- LAZIO T. J. W. and W. M. FARRELL:
Radio Detection of Extrasolar Planets: Present and Future Prospects.....603